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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,200	03/29/2004	James A. Mott	SUN-P8925	2866
57960 7590 10/19/2007 SUN MICROSYSTEMS INC. C/O PARK, VAUGHAN & FLEMING LLP 2820 FIFTH STREET DAVIS, CA 95618-7759			EXAMINER VU, THONG H	
			ART UNIT	PAPER NUMBER
			2619	
			MAIL DATE	DELIVERY MODE
			10/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/812,200

Applicant(s)

MOTT, JAMES A.

Examiner

Thong H. Vu

Art Unit

2619

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

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1. Claims 1-45 are pending. Claims 1,13,16,29,34 and 38 have been amended. The Final Action is appropriate.
2. The co-pending application 10/811,642 file 3/29/2004.

Response to Arguments

3. Applicant's arguments, see pages 15-16, filed 10/02/07, with respect to the rejection(s) of claim(s) 1-45 under Brian-Payson have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Craddock.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-45 are rejected on the ground of nonstatutory double patenting over claims 1-33 of U. S. Patent No. 6,928,508 B2 ('508) since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

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The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows:

('508) 1. A method of accessing a PCI (Peripheral Component Interconnect) device from an InfiniBand host computer, comprising:

at an InfiniBand host computer, locating a remote node having a PCI segment comprising one or more PCI devices;

loading an InfiniBand/PCI nexus driver configured to enable the host computer to access the PCI segment of the remote node across an InfiniBand network coupling the host computer to the remote node;

establishing a connection with the PCI segment of the remote node;

identifying one or more PCI devices coupled to the PCI segment;

loading a device driver for a first PCI device within the remote node; and

exchanging data between the host computer and the first PCI device by:

registering a host computer memory address with the remote node;

mapping (i.e.: sharing)

said host computer memory address to a local PCI address; and

transferring the data via the mapped local PCI address.

(Application) 1. In a communication device coupled to an InfiniBand network and an external communication system, a method of transferring a communication from the InfiniBand network to the external communication system, the method comprising:

receiving packets for each of multiple queue pairs terminating at the communication device; for each of said queue pairs:

reassembling in a shared memory contents of said packets into communications to be transmitted to the external communication system wherein the memory is a single contiguous memory structure shared by multiple queue pairs and virtual lanes; and

maintaining an associated linked list identifying locations in said shared single contiguous memory in which said communications are reassembled; and

when a communication is reassembled for a first queue pair, identifying to a transmission module a portion of a first linked list associated with said first queue pair, wherein said first linked list portion identifies shared single contiguous memory locations in which said communication was reassembled.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See MPEP § 804.

6. Claims 1-45 are provisionally rejected on the ground of nonstatutory double patenting over claims 1-42 of copending Application No. 10/091,746. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

('746) 20. A computer readable storage medium storing instructions that, when executed by a computer, cause the computer to perform a method of segregating network communications, the method comprising:

- (a) identifying a first type of communication susceptible to conflict with another type of communication if both types of communication **share** a communication channel;
 - (b) establishing a first channel over one or more communication links;
 - (c) configuring a device to transmit only said first type of communication over said first channel;
- wherein said first type of communication is susceptible to conflict with a second type of communication if one of said first type of communication and said second type of communication tends to deprive the other of bandwidth.

31. wherein said first channel and said second channel comprise distinct virtual lanes within an InfiniBand network.

(Application) 1. In a communication device coupled to an InfiniBand network and an external communication system, a method of transferring a communication from the InfiniBand network to the external communication system, the method comprising:

receiving packets for each of multiple queue pairs terminating at the communication device; for each of said queue pairs:
reassembling in a shared memory contents of said packets into communications to be transmitted to the external communication system wherein the memory is a single contiguous memory structure **shared** by multiple queue pairs and virtual lanes; and
maintaining an associated linked list identifying locations in said shared single contiguous memory in which said communications are reassembled; and
when a communication is reassembled for a first queue pair, identifying to a transmission module a portion of a first linked list associated with said first queue pair, wherein said first linked list portion identifies shared single contiguous memory locations in which said communication was reassembled.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See MPEP § 804.

Claim Rejections - 35 USC § 102

Claims 1-45 are rejected under 35 U.S.C. 102(e) as being anticipated by Craddock et al [Craddock 7,092,401 B2].

7. As per claim 1, Craddock discloses In a communication device coupled to an InfiniBand network and an external communication system (i.e.: remote system), a method of transferring a communication from the InfiniBand network to the external communication system [Craddock, Infiniband, col 2 line 43; Internet, intranet, remote system, col 5 line 16], the method comprising:

receiving packets for each of multiple queue pairs terminating at the communication device [Craddock, queue pairs, virtual lanes, Fig 3A]; for each of said queue pairs:

reassembling in a shared memory contents of said packets into communications to be transmitted to the external communication system [Craddock, the context is shared by all queue pairs, col 12 line 36], wherein the memory is a single contiguous memory structure shared by multiple queue pairs and virtual lanes [Craddock, a virtual contiguous memory, col 9 line 67, Fig 4] and

maintaining an associated linked list identifying locations in said shared single contiguous memory in which said communications are reassembled [Craddock, a scatter list, col 10 lines 25-56]; and

when a communication is reassembled for a first queue pair, identifying to a transmission module a portion of a first linked list associated with said first queue pair, wherein said first linked list portion identifies shared single contiguous memory locations in which said communication was reassembled [Craddock, associate a local queue pair with one remote queue pair, col 11 lines 5-14; reference by a gather list contained in the send work queue element, col 13 lines 33-48].

8. As per claim 2, Craddock discloses only after said reassembled communication is transmitted, removing said portion of said first linked list from said first linked list [Craddock, reassemble, col 5 line 1; removed from the receive queue, col 20 line 8].

9. As per claim 3, Craddock discloses said reassembling comprises: as said packets are received from the InfiniBand network, queuing said contents directly into said shared single contiguous memory; wherein said shared single contiguous memory serves as receive queues for each of said multiple queue pairs [Craddock, the context is shared by all queue pairs, col 12 line 36].

10. As per claim 4, Craddock disclose transmitting said reassembled communication from said shared single contiguous memory; wherein said shared single contiguous memory serves as a transmit queue for the external communication system [Craddock, the context is shared by all queue pairs, col 12 line 36].

11. As per claim 5, Craddock discloses the external communication system is an Ethernet network [Craddock, Ethernet, col 6 line 56].
12. As per claim 6, Craddock discloses said received packets comprise portions of encapsulated Ethernet packets [Craddock, Ethernet, col 6 line 56].
13. As per claim 7, Craddock discloses said identifying to a transmission module comprises transferring to the transmission module a set of pointers identifying said reassembled communication rather than transferring to the transmission module said reassembled communication [Craddock, pointers, Fig 12].
14. As per claim 8, Craddock discloses said identifying to a transmission module comprises identifying to the transmission module a head of said portion of said first linked list; and a tail of said portion of said first linked list [Craddock, pointers, Fig 12].
15. As per claim 9, Craddock discloses said maintaining an associated linked list for said first queue pair:

maintaining a head pointer configured to identify [Craddock, a head index, col 17 lines 55-65]:

a first location in said shared single contiguous memory in which contents of a first packet are stored; and a first entry in a shared control structure, said first entry corresponding to said first location in said shared single contiguous memory [Craddock, a virtually contiguous memory, Fig , col 9 line 67; shared by all the queue pairs, col 12 line 36]; and maintaining a tail pointer configured to identify [Craddock, a tail index, col 19 lines 12-18]:

a final location in said shared single contiguous memory in which contents of a final packet are stored; and a final entry in said shared control structure; wherein each entry in said shared control structure that is part of said first linked list, except for said final entry, identifies a subsequent entry in said shared control structure and identifies a location in said shared single contiguous memory corresponding to said subsequent entry [Craddock, except for the variant CRC trailer field, col 6 lines 8-15; a scatter list, col 10 lines 23-31; a gather list, col 13 lines 33-48].

16. As per claim 10, Craddock discloses protecting said shared control structure by one or more of separating bits of the structure to prevent double bit errors; and providing single error correct and double error detect protection for one or more entries in the control structure [Craddock, CRC, error, col 13 line 4].

17. As per claim 11, Craddock discloses extending the single error correct and double error detect protection to include said location in said shared memory [Craddock, CRC, error, col 13 line 4].

18. As per claim 12, Craddock discloses managing said linked lists for said queue pairs with a shared control; wherein each said location in said shared contiguous memory corresponds to an entry in said shared control; and wherein each entry in said shared control is configured to identify: a subsequent entry within the same linked list; and a location in said shared contiguous memory corresponding to said subsequent entry [Craddock, subsequent WQEs, col 20 lines 17-25].

19. As per claim 13, Craddock discloses A computer readable medium storing instructions that, when executed by a computer, cause the computer to perform a method of transferring a communication from an InfiniBand network to a communication system external to the InfiniBand network, the method comprising:

for each of multiple queue pairs terminating at the communication device, receiving packets [Craddock, a set of queue pairs, col 8 line 25]; for each of said queue pairs:

reassembling in a shared memory contents of said packets into communications to be transmitted to the external communication system [Craddock, the context is shared by all queue pairs, col 12 line 36]; and

maintaining an associated linked list identifying locations in said shared single contiguous memory in which said communications are reassembled [Craddock, a virtual contiguous memory, col 9 line 67, Fig 4]; and

when a communication is reassembled for a first queue pair, identifying to a transmission module a portion of a first linked list associated with said first queue pair, wherein said first linked list portion identifies shared single contiguous memory locations in which said communication was reassembled [Craddock, associate a local queue pair with one remote queue pair, col 11 lines 5-14; reference by a gather list contained in the send work queue element, col 13 lines 33-48].

20. As per claim 14, Craddock discloses as said packets are received from the InfiniBand network, queuing said contents directly into said shared single contiguous

memory [Craddock, directly, col 10 lines 57-65], wherein said shared single contiguous memory serves as receive queues for each of said multiple queue pairs; and transmitting said reassembled communication from said shared single contiguous memory, wherein said shared single contiguous memory also serves as a transmit queue for the external communication system [Craddock, the context is shared by all queue pairs, col 12 line 36].

21. As per claim 15, Craddock discloses said identifying to a transmission module comprises transferring to the transmission module a set of pointers identifying said reassembled communication rather than transferring to the transmission module said reassembled communication [Craddock, pointers, Fig 12].

22. As per claim 16, Craddock discloses A method of storing a communication, received from an InfiniBand network, for transmission external to the InfiniBand network, the method comprising:

receiving a set of InfiniBand packets from an InfiniBand network, each said packet comprising a portion of a communication to be transmitted external to the InfiniBand network [Craddock, RDMA, col 10 lines 3-12];

storing said communication portions in a single contiguous memory shared among multiple queue pairs and virtual lanes of the InfiniBand network, including a first queue pair through which said set of InfiniBand packets is received [Craddock, the context is shared by all queue pairs, col 12 line 36];

maintaining a first linked list for said first queue pair to identify locations in said single contiguous memory in which said communication portions are stored; and when

all of said communication portions are stored in said single contiguous memory, scheduling said communication for transmission from said single contiguous memory [Craddock, associate a local queue pair with one remote queue pair, col 11 lines 5-14; reference by a gather list contained in the send work queue element, col 13 lines 33-48; periodically update, col 18 lines 11-21].

23. As per claim 17, Craddock discloses said storing comprises reassembling said communication portions into said communication [Craddock, reassemble, col 5 line 1].

24. As per claim 18, Craddock discloses said scheduling comprises: identifying to a transmission module a first entry in said first linked list corresponding to a location in said single contiguous memory in which a first portion of said communication is stored; and identifying to a transmission module a final entry in said first linked list corresponding to a location in said single contiguous memory in which a final portion of said communication is stored [Craddock, head and tail pointers, Fig 12].

25. As per claim 19, Craddock discloses said InfiniBand packets comprise Send commands conveying said portions of said first communication [Craddock, monitoring, col 22 line 15].

26. As per claim 20, Craddock discloses said communication is an Ethernet packet [Craddock, Ethernet 150, Fig 1].

27. As per claim 21, Craddock discloses said maintaining a first linked list comprises: maintaining a head pointer identifying [Craddock, the head index, col 17 lines 55-63]; a first entry in a control structure; and a first location in said single contiguous memory in which a first portion of said communication is stored [Craddock, a virtually contiguous

memory, col 9 line 66]; and maintaining a tail pointer identifying: a final entry in said control structure [Craddock, the tail index, col 17 lines 55-63]; and a final location in said single contiguous memory in which a final portion of said communication is stored; wherein said first entry is linked to said final entry by zero or more intermediate entries in said control structure, each said intermediate entry corresponding to an intermediate location in said single contiguous memory in which a portion of said communication is stored as inherent feature of the contiguous memory.

28. As per claim 22, Craddock discloses updating said first linked list to remove said first entry, said final entry and said intermediate entries from said first linked list only after said communication is transmitted [Craddock, a list of pages, col 17 lines 25-30].

29. As per claim 23, Craddock discloses said maintaining a first linked list comprises: in a control structure, maintaining a first linked list of control entries, wherein each of said control entries except a final control entry identifies a subsequent control entry; and corresponding to said subsequent control entry, a location in said single contiguous memory in which data received through said first queue pair are stored [Craddock, a virtual contiguous memory, col 9 line 67, Fig 4].

30. As per claim 24, Craddock discloses said control structure and said single contiguous memory are separate physical memory structures [Craddock, a single physical link, col 8 line 66].

31. As per claim 25, Craddock discloses said control structure and said single contiguous memory employ common addressing via said first linked list [Craddock, a set of virtual contiguous memory addresses, col 10 lines 3-12].

32. As per claim 26, Craddock discloses said maintaining further comprises:

maintaining a head pointer identifying a first control entry in said first linked list and a first location in said single contiguous memory; and maintaining a tail pointer identifying said final control entry in said first linked list and a final location in said single contiguous memory [Craddock, head and tail pointers, Fig 12].

33. As per claim 27, Craddock discloses identifying to a transmission module a sub-list of said first linked list of control entries, wherein said sub-list includes control entries corresponding to all locations in said single contiguous memory in which portions of said communication are stored [Craddock, remote subnet, col 15 line 58].

34. As per claim 28, Craddock discloses removing said sub-list of control entries from said first linked list only after said communication is transmitted [Craddock, remote subnet, col 15 line 58].

35. As per claim 29, Craddock discloses A computer readable medium storing instructions that, when executed by a computer, cause the computer to perform a method of storing a communication, received from an InfiniBand network, for transmission external to the InfiniBand network, the method comprising:
receiving a set of InfiniBand packets from an InfiniBand network, each said packet comprising a portion of a communication to be transmitted external to the InfiniBand network [Craddock, RDMA, col 10 lines 3-12];
storing said communication portions in a single contiguous memory shared among multiple queue pairs and virtual lanes of the InfiniBand network, including a first queue

pair through which said set of InfiniBand packets is received [Craddock, queue pairs, col 8 lines 22-39];

maintaining a first linked list for said first queue pair to identify locations in said single contiguous memory in which said communication portions are stored; and when all of said communication portions are stored in said single contiguous memory, scheduling said communication for transmission from said single contiguous memory [Craddock, periodically update, col 18 lines 11-21].

36. As per claim 30, Craddock discloses said scheduling [Craddock, periodically, col 18 lines 11-21] comprises: identifying to a transmission module a first entry in said first linked list corresponding to a location in said single contiguous memory in which a first portion of said communication is stored; and identifying to a transmission module a final entry in said first linked list corresponding to a location in said single contiguous memory in which a final portion of said communication is stored [Craddock, claim 4].

37. As per claim 31, Craddock discloses said maintaining a first linked list comprises: in a control structure, maintaining a first linked list of control entries, wherein each of said control entries except a final control entry identifies: a subsequent control entry; and corresponding to said subsequent control entry, a location in said single contiguous memory in which data received through said first queue pair are stored; maintaining a head pointer identifying a first control entry in said first linked list and a first location in said single contiguous memory; and maintaining a tail pointer identifying said final control entry in said first linked list and a final location in said single contiguous memory [Craddock, the header and tail pointers, col 4 lines 58].

38. As per claim 32, Craddock discloses identifying to a transmission module a sub-list of said first linked list of control entries, wherein said sub-list includes control entries corresponding to all locations in said single contiguous memory in which portions of said communication are stored as inherent of link list.

39. As per claim 33, Craddock discloses removing said sub-list of control entries from said first linked list only after said communication is transmitted [Craddock, a scatter list, col 10 lines 25-56].

40. As per claim 38 Craddock discloses An apparatus for storing data received from an InfiniBand network, for transfer to an external communication system, comprising:
an InfiniBand receive module configured to receive packets from a plurality of InfiniBand communication connections;

a transmit module configured to transmit communications to a communication system external to the InfiniBand network via one or more outbound ports [Craddock, a router 117, Fig 1];

a single contiguous memory shared between said InfiniBand receive module and said transmit module [Craddock, shared queue, 0142,0147];

a control, shared between said InfiniBand receive module and said transmit module, for maintaining a linked list for each of said communication connections and for each of the outbound ports [Craddock, the context is shared by all queue pairs, col 12 line 36; a scatter list, col 10 lines 25-56].

41. As per claim 39, Craddock discloses for each said communication connection a head pointer identifying a head of said linked list for said communication connection; and a tail pointer identifying a tail of said linked list for said communication connection [].

42. As per claim 40, Craddock discloses for each of the outbound ports a head pointer identifying a head of said linked list for the outbound port; and a tail pointer identifying a tail of said linked list for the outbound port [Craddock, the heade and tail pointer, col 4 line 58].

43. As per claim 41, Craddock discloses for each outbound queue of each of the outbound ports a head pointer identifying a head of said linked list for the outbound queue; and a tail pointer identifying a tail of said linked list for the outbound queue [Craddock, the heade and tail pointer, col 4 line 58].

44. As per claim 42, Craddock discloses said communication connections are queue pairs [Craddock, queue pair, 0019].

45. As per claim 43, Craddock discloses said communication connections are virtual lanes [Craddock, virtual address, 0025].

46. As per claim 44, Craddock discloses the external communication system comprises an Ethernet network [Craddock, Ethernet, 0009].

47. As per claim 45, Craddock discloses the external communication system comprises a SONET network as a design choice.

Claim Rejections - 35 USC § 103

Claims 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craddock et al [Craddock 7,092,401 B2] in view of the well-known art.

48. As per claim 34, Craddock discloses A computer readable medium containing a data structure configured for simultaneously queuing contents of packets as they are received from an InfiniBand network and storing communications reassembled from said contents for transmission external to the InfiniBand network, the data structure comprising:

a single contiguous memory shared by multiple queue pairs and virtual lanes

[Craddock, a virtual contiguous memory, col 9 line 67, Fig 4; queue pairs, virtual lanes, col 8 lines 25-29],

a shared control, comprising for each of said communication connections, a linked list of control entries [Craddock, a scatter list, col 10 lines 25-56], wherein each said control entry is configured to identify:

a subsequent control entry in said linked list; and in said single contiguous shared memory, a memory bucket corresponding to said subsequent control entry; wherein said shared single contiguous memory and said shared control are configured for access by an InfiniBand receive module configured to receive said packets [Craddock, a virtual contiguous memory, col 9 line 67, Fig 4]; and a transmit module configured to transmit said communications external to the InfiniBand network.

However Craddock does not explicitly detail

for each of a plurality of InfiniBand communication connections, memory buckets for storing contents of packets received on the communication connection; wherein said contents of said packets are reassembled into communications in said memory buckets as said contents are stored;

It was well-known in the memory art that a shared medium, shared switching fabric (see Chinn reference) or an improved address table apparatus (see Chen reference) would provide a plurality of memory banks wherein each of memory bank included a plurality of memory buckets for storing data packets.

Therefore it would have been obvious to an ordinary skill in the art at the time the invention was made to incorporate the memory buckets stored data packets wherein the content of data packets are used for communication as taught by the prior art into the Craddock's apparatus in order to utilize the shared memory on the network.

Doing so would improve the process of search and retrieve data in network memory.

49. As per claim 35, Craddock discloses a linked list of free entries, wherein each said free entry is configured to identify, in said shared memory, a free memory bucket [Craddock, a scatter list, col 10 lines 25-56].

50. As per claim 36, Craddock discloses said shared control is protected by one or more of: separating bits of the structure to prevent double bit errors; and providing single error correct and double error detect protection for one or more control entries in the shared control [Craddock, error, col 23 lines 21].

51. As per claim 37, Craddock discloses a control entry in said shared control is further protected by extending the single error correct and double error detect protection to include the identity of a memory bucket in said shared memory [Craddock, error, col 23 lines 21].

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THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Thong H. Vu* whose telephone number is 571-272-3904. The examiner can normally be reached on 6:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Patel Jay* can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thong Vu
Primary Examiner

 THONG VU
PRIMARY PATENT EXAMINER